

Listing of Claims:

Claims 1-6 (canceled)

Claim 7. (original) A method of manufacturing a ceramic film for reducing leakage of a selected gas through an outer surface of a porous ceramic substrate structure having an interior portion formed with the outer surface; the substrate being porous to at least one selected gas comprising:

applying a first ceramic coating layer to at least a portion of the outer surface of the ceramic substrate structure; the first ceramic coating being initially applied in a suspension state, the first ceramic coating suspension having a desired level of viscosity for substantially uniform application to the surface; and being formed with a ceramic electrolyte powder and at least one organic additive; and

applying a second ceramic coating layer to at least a portion of the outer surface of the ceramic substrate structure following application of the first ceramic coating and subsequent to a drying process of the first ceramic coating; the second ceramic coating being initially applied subsequent to application of the first ceramic coating; the second ceramic coating being initially applied in a suspension state having a lower viscosity relative to the viscosity of the suspension used for the first coating..

Claim 8. (original) The method of claim 7 further including applying a third ceramic coating layer to at least a portion of the outer surface of the ceramic substrate structure following application of the second ceramic coating; the third ceramic coating being initially applied subsequent to applying the second ceramic coating; the third ceramic coating being initially applied as a suspension having a lower viscosity relative to the viscosity of the second ceramic coating.

Claim 9. (original) The method of claim 7 wherein a vacuum is applied to the ceramic substrate structure on a side directionally opposite to the first ceramic coating in relation to the outer surface; the vacuum is formed during the application of the ceramic coating to the ceramic substrate structure while the ceramic coating is in a suspension state.

Claim 10. (original) The method of claim 7 wherein the first ceramic coating comprises toluene, ethanol, butyl benzyl phthalate, polyvinyl butyral, and a powder of $\text{Ce}_{0.8}\text{Gd}_{0.2}\text{O}_2$ (CGO).

Claim 11. (original) The method of claim 7 wherein the ceramic coating layers are applied to the ceramic substrate by dipping a portion of the ceramic substrate into the desired suspension.

Claim 12. (original) The method of claim 7 wherein the viscosity of the ceramic coating suspension is in the range of 50-200 cPs.

Claims 13-17 (canceled)